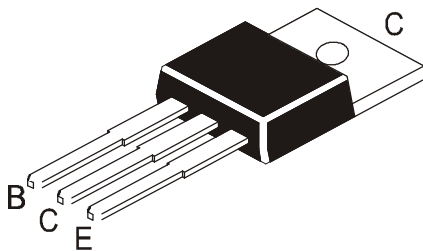




## PLASTIC POWER TRANSISTORS



TIP120	TIP125
TIP121	TIP126
TIP122	TIP127
NPN	PNP

**TO-220**  
**Plastic Package**

**High Power Switching, Hammer Drive, Pulse Motor Drive and Inductive Load Drive Applications**

### ABSOLUTE MAXIMUM RATINGS

DESCRIPTION		TIP120/125	TIP121/126	TIP122/127	UNIT
Collector Emitter Voltage	$V_{CEO}$	60	80	100	V
Collector Base Voltage	$V_{CBO}$	60	80	100	V
Emitter Base Voltage	$V_{EBO}$	5			V
Collector Current Continuous	$I_C$	5			A
Collector Current Peak	$I_{CM}$	8			A
Base Current	$I_B$	120			mA
Power Dissipation upto $T_c=25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	65 0.52			W W/ $^\circ\text{C}$
Power Dissipation upto $T_a=25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	2 16			W mW/ $^\circ\text{C}$
Unclamped Inductive Load Energy	*E	50			mJ
Operating And Storage Junction Temperature	$T_j, T_{stg}$	- 65 to +150			$^\circ\text{C}$

\*  $I_C=1\text{A}$ ,  $L=100\text{mH}$ ,  $\text{P.R.F.}=10\text{Hz}$ ,  $V_{CC}=20\text{V}$ ,  $R_{BE}=100\text{W}$

### THERMAL RESISTANCE

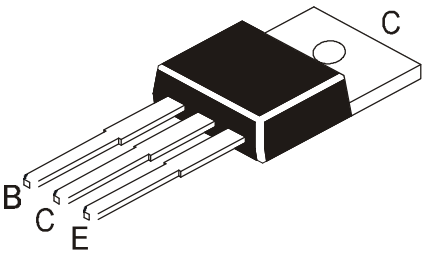
Junction to Case	$R_{th(j-c)}$	1.92	$^\circ\text{C/W}$
Junction to Ambient in free air	$R_{th(j-a)}$	62.5	$^\circ\text{C/W}$

### ELECTRICAL CHARACTERISTICS ( $T_c=25^\circ\text{C}$ unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	TIP120/125		TIP121/126		TIP122/127		UNIT
			MIN	MAX	MIN	MAX	MIN	MAX	
Collector Emitter (sus) Voltage	* $V_{CEO(sus)}$	$I_C=100\text{mA}$ , $I_B=0$	60		80		100		V
Collector Cut Off Current	$I_{CEO}$	$V_{CE}=50\text{V}$ , $I_B=0$						0.5	mA
		$V_{CE}=40\text{V}$ , $I_B=0$				0.5			mA
		$V_{CE}=30\text{V}$ , $I_B=0$		0.5					mA
Collector Cut Off Current	$I_{CBO}$	$V_{CB}=100\text{V}$ , $I_E=0$						0.2	mA
		$V_{CB}=80\text{V}$ , $I_E=0$				0.2			mA
		$V_{CB}=60\text{V}$ , $I_E=0$		0.2					mA
Emitter Cut Off Current	$I_{EBO}$	$V_{EB}=5\text{V}$ , $I_C=0$		2.0		2.0		2.0	mA
DC Current Gain	* $h_{FE}$	$I_C=0.5\text{A}$ , $V_{CE}=3\text{V}$	1000		1000		1000		
		$I_C=3\text{A}$ , $V_{CE}=3\text{V}$	1000		1000		1000		
Collector Emitter Saturation Voltage	* $V_{CE(sat)}$	$I_C=3\text{A}$ , $I_B=12\text{mA}$		2.0		2.0		2.0	V
		$I_C=5\text{A}$ , $I_B=20\text{mA}$		4.0		4.0		4.0	V
Base Emitter On Voltage	* $V_{BE(on)}$	$I_C=3\text{A}$ , $V_{CE}=3\text{V}$		2.5		2.5		2.5	V

\*Pulse Test : Pulse width  $\leq 300\text{ms}$ , Duty Cycle  $\leq 2\%$

PLASTIC POWER TRANSISTORS



TIP120	TIP125
TIP121	TIP126
TIP122	TIP127
NPN	PNP

TO-220  
Plastic Package

ELECTRICAL CHARACTERISTICS (T<sub>C</sub>=25°C unless specified otherwise)

DYNAMIC CHARACTERISTIC

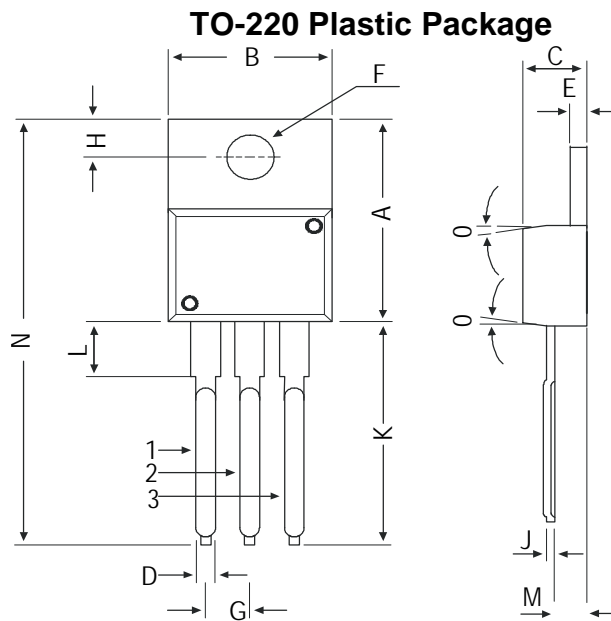
DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Small Signal Current Gain	$h_{fe}$	$I_C=3A, V_{CE}=4V, f=1MHz$	4			
Output Capacitance	$C_{ob}$	$V_{CB}=10V, I_E=0, f=0.1MHz$ TIP125,126,127 TIP120,121,122			300 200	pF pF

SWITCHING CHARACTERISTICS

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Turn on time	$t_{on}$	$I_C=3A, R_L=10\Omega$ $I_{B1}=I_{B2}=12mA$		0.4		$\mu s$
Turn off time	$t_{off}$	$V_{EB(off)}=5V$		1.2		$\mu s$

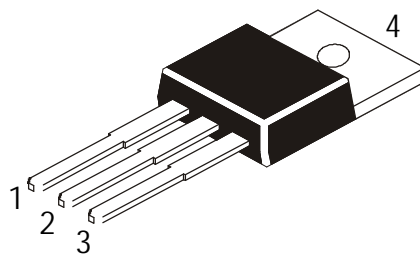
TIP120	TIP125
TIP121	TIP126
TIP122	TIP127
NPN	PNP

## TO-220 Plastic Package



DIM	MIN	MAX
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D	—	0.90
E	1.15	1.40
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J	—	0.56
K	12.70	14.73
L	2.80	4.07
M	2.03	2.92
N	—	31.24
O	7 DEG	

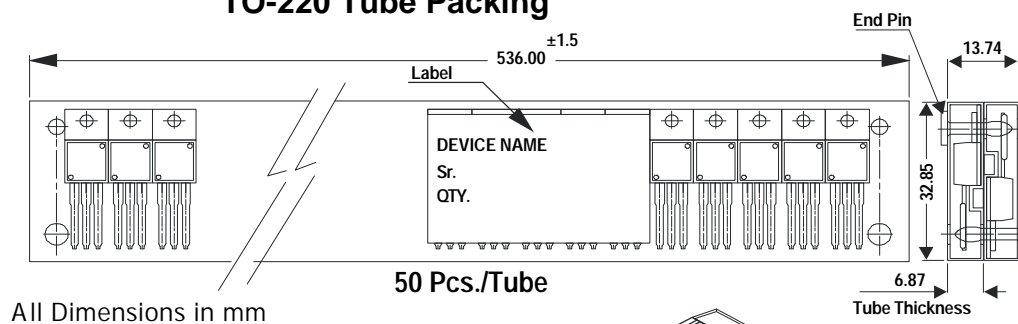
All diminsions in mm.



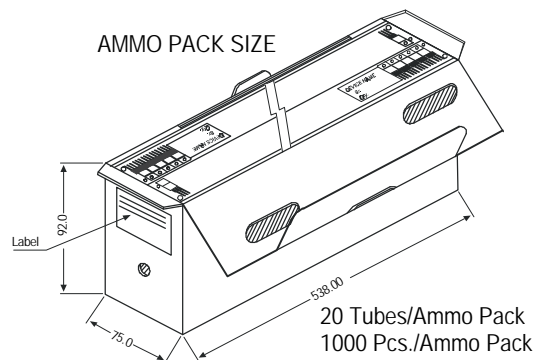
### Pin Configuration

1. Base
2. Collector
3. Emitter
4. Collector

## TO-220 Tube Packing



### AMMO PACK SIZE



## Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-220 /FP	200 pcs/polybag	396 gm/200 pcs	3" x 7.5" x 7.5"	1.0K	17" x 15" x 13.5"	16.0K	36 kgs
	50 pcs/tube	120 gm/50 pcs	3.5" x 3.7" x 21.5"	1.0K	19" x 19" x 19"	10.0K	29 kgs